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| MOTOROLA, INC. LAW DEPARTMENT 1303 E. ALGONQUIN ROAD SCHAUMBURG, IL 60196 | | | EXAMINER LOO, JUVENA W | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/721,213

Applicant(s)

STEWART, MARK ANDREW
WHITTAKER

Examiner

Juvena W. Loo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) 13-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to amendment filed on September 06, 2007 in which claims 1 to 15 were amended. Claims 16 – 18 were added.

Status of Claims

Claims 1 - 18 are pending, of which claims 1, 5, and 11 are in independent form.

Claims 1, 3 – 5, 7 – 11, and 13 – 18 are rejected under 35 USC 102(e).

Claims 2, 6, and 12 are rejected under 35 USC 103(a).

Claim 13 is objected to under 37 CFR 1.75(c).

Claim 14 and 15 are objected to because of informalities.

Claims 16 – 18 are rejected under 35 USC 112.

1. Applicant's arguments filed September 06, 2007 have been fully considered but they are not persuasive.

Claim Objections

2. Claim 13 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

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3. Claims 14 and 15 are objected to because of the following informalities: In particular, claims 14 and 15 are objected to because they include reference characters, DLID, which are not enclosed within parentheses. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. Claims 16 - 18 contain the trademark/trade name InfiniBand. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe InfiniBand switch and, accordingly, the identification/description is indefinite.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

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1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 5, 6, 7, 8, and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 8, 9, 10, 11, and 12 of copending Application No. 10/722,021. The conflicting claims are not identical since the current application (No. 10/721,213) is directed to a switch while the other one is directed to a connection controller (Application No. 10/722,021). The switch and the connection controller have different functional entities and are not patentably distinct from each other because it would have been obvious to one of ordinary skill in the art at the time of the invention to use the controller for the purpose of configuring the switch. The motivation is to enhance the controller's ability to program and update the forwarding instructions in the switch.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claims 5, 6, 7, 8, and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9, 10, 11, 12, and 13 of copending Application No. 10/722,022. The conflicting claims are not identical

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since the current application (No. 10/721,213) is directed to a switch while the other one is directed to a network (Application No. 10/722,022). The switch and the network have different functional entities and are not patentably distinct from each other because it would have been obvious to one of ordinary skill in the art at the time of the invention to use the switch in the network. The motivation is that the switching will allow the network to direct data to different destinations.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 3 - 5, 7 - 11, and 13 - 15 are rejected under 35 USC 102(e) as being anticipated by Brahmaroutu, US2003/0033427 A1.

As per claim 1, Brahmaroutu discloses a switch comprising a forwarding table (Figure 5, 510A- 510N), a plurality of Destination Local Identifier (DLID) and a set of forwarding instructions (Page 7, Section 60, a destination local identifier is assigned to a

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switch port and the right routing for that switch port is determined when building the forwarding table), each of the plurality of DLIDs corresponds to one of a plurality of routing trees and one of a plurality of end nodes in a network (Page 7, Sections 60-63, all the links that exist between the designated switch port and other switches in the network are identified and the best route between the switches is selected from the all-switch shortest paths table and entered into the forwarding table); and wherein the forwarding instructions create paths appropriate to make the network operate as a strictly non-interfering network (Page 2, Section 22, separate channels are used for different functions. In other words, a channel may be used for transporting send request and reply messages while another channel may be employed to move data between two nodes through switches so various sources do not attempt to use the same network resources at the same time).

As per claims 3 and 8, Brahmaroutu discloses the structure and calculation of the plurality of routing trees comprises for each spine, a shortest path for the spine node to each of the plurality of end nodes (Page 5, Sections 46-54, the shortest paths between every switch pair are determined by using any All Pair Shortest Paths (APSP) algorithm).

As per claims 4 and 9, Brahmaroutu discloses each of the plurality of routing trees comprises at least a portion of a plurality of switches and corresponding plurality of links that form a shortest path from one of the plurality of end nodes to a spine node

of the network (Figure 7-8, Page 6-8 Sections 60-64, 67-77, the multipath assignment algorithm is used to establish all the links that exist between the destination switch and other switches in the network).

As per claim 5, Brahmaroutu discloses a method of populating a forwarding table comprises calculating a plurality of routing trees for the switch (Pages 5-6, Sections 46-54, a table contains the shortest path from each switch to every other switch in the network is generated); calculating a plurality of Destination Location Identifiers (DLID) and a set of forwarding instructions (Page 7, Section 60, one at a time, a destination local identifier is assigned to a switch port and the right routing for that switch port is determined when building the forwarding table), each of the plurality of DLIDs corresponds to one of a plurality of routing trees and one of a plurality of end nodes in a network (Page 7, Sections 60-63, all the links that exist between the designated switch port and other switches in the network are identified and the best route between the switches is selected from the all-switch shortest paths table and entered into the forwarding table), wherein the forwarding instructions create paths appropriate to make the network operate as a strictly non-interfering network (Page 2, Section 22, separate channels are used for different functions. In other words, a channel may be used for transporting send request and reply messages while another channel may be employed to move data between two nodes through switches so various sources do not attempt to use the same network resources at the same time); and populating a forwarding table of switch with the plurality of DLIDs and the set of forwarding instructions (Page 7, Section

66, once the forwarding tables are built for all switches, the forwarding tables will be downloaded into respective switches in the network).

As per claim 7, Brahmaroutu discloses each of the plurality of end nodes comprises a destination, and the destination is identified by a BaseLID (Page 4, Section 31).

As per claim 10, Brahmaroutu discloses the shortest path is loop-less (Page 6, Section 55).

As per claim 11, Brahmaroutu discloses a method of forwarding a packet within a network, where the packet is created at one of the sources and is addressed to one of the destinations, comprising populating a forwarding table of the switch with a plurality of Destination Location Identifiers (DLID) and a set of forwarding instructions (Page 7, Section 66) and wherein the forwarding instructions create paths appropriate to make the network operate as a strictly non-interfering network (Page 2, Section 22, separate channels are used for different functions. In other words, a channel may be used for transporting send request and reply messages while another channel may be employed to move data between two nodes through switches so various sources do not attempt to use the same network resources at the same time); and the packet following a path through the switch from one the plurality of sources to the one of a plurality of destinations, where the switch forwards the packet according to the plurality of DLIDs assigned to the packet (Figure 3 and Page 3 Section 28, an example of a packet which includes a header, a payload, and any error checking information; the header contains a

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destination local identifier associated with a destination port and data path in the network as well as a source local identifier for the source node used for routing by the switches; Figure 4 and Page 4, Section 34, an example of different routes a packet can travel across in a network).

As per claim 13, Brahmaroutu discloses the network operates as a strictly non-interfering network (Page 2, Section 22, separate channels are used for different functions. In other words, a channel may be used for transporting send request and reply messages while another channel may be employed to move data between two nodes through switches so various sources do not attempt to use the same network resources at the same time).

As per claim 14, Brahmaroutu discloses the packet following the path comprises looking up the one of the plurality of DLIDs assigned to the packet in the forwarding table at the switch (Figure 3 and Page 3 Section 28, a packet contains a destination local identifier (DLID) that can be as an index to the forwarding table at the switch).

As per claim 15, Brahmaroutu discloses the packet following the path comprises the switch forwarding the packet in accordance with the one of the plurality of DLIDs assigned to the packet and the set of forwarding instructions as found in the forwarding table of the switch (Page 2 Section 19).

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As per claim 16, Brahmaroutu discloses the switch is an InfiniBand switch in compliance with an InfiniBand Architecture Specification (Page 2, Section 0021).

As per claim 17, Brahmaroutu discloses the switch is an InfiniBand switch in compliance with an InfiniBand Architecture Specification (Page 2, Section 0021).

As per claim 18, Brahmaroutu discloses the switch is an InfiniBand switch in compliance with an InfiniBand Architecture Specification (Page 2, Section 0021).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2, 6, and 12 are rejected under 35 USC 103(a) as being unpatentable over Brahmaroutu (US 2003/0033427 A1) in view of Yang et al. (US Patent 5,940,389).

Regarding claims 2, 6, and 12, Brahmaroutu discloses a mechanism to generate forwarding tables for switches (Page 1, Sections 5 and 6). However, Brahmaroutu fails to teach that the switch fabric is a CLOS network. In the same field of endeavor, Yang et al. discloses a Benes Network, which is a special case of a CLOS network, can be used as a switch fabric (Page 4 lines 1-5) and that each node in the network has an entry, which is indexed by an identifier and contains information regarding how to

transmit received cells to the next node, in the routing table. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to configure the method and system of Brahmaroutu, as a CLOS network. The motivation would have been in reducing latency and minimizing single point failures.

Response to Argument

12. Applicant's arguments with respect to claims 1 - 15 have been considered but are moot in view of the new ground(s) of rejection.

In response to page 8, applicant submits that "Brahmaroutu does not disclose that the forwarding table includes paths for a strictly non-interfering network" in regard to claims 1, 5, and 11. In reply, Brahmaroutu discloses that separate channels are used for different functions. In other words, a channel may be used for transporting send request and reply messages while another channel may be employed to move data between two nodes through switches so various sources do not attempt to use the same network resources at the same time (Page 2, Section 22). In other words, multiple channels can be dedicated to transport traffic between two nodes.

Dependent claims 2 – 4, 6 – 10, and 12 – 15 remain to be rejected. The Examiner respectfully submits that claims 2 – 4, 6 – 10, and 12 – 15 are unpatentable over Brahmaroutu in view of Yang for the same reason explained above.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juvena W. Loo whose telephone number is (571) 270-1974. The examiner can normally be reached on Mon.-Thurs : 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Coby can be reached on (571) 272-4017. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Juvena W Loo
Examiner
Art Unit 2600


FRANTZ COBY
SUPERVISORY PATENT EXAMINER